Food Policy 97 (2020) 102000

Contents lists available at ScienceDirect

Food Policy

journal homepage: www.elsevier.com/locate/foodpol

Viewpoint: COVID-19 and seed security response now and beyond

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ARTICLE INFO

Keywords:
COVID-19
Seed security
Emergency/development response
Smallholder farmers
Seed systems
Recommendations

ABSTRACT

COVID-19 brings new challenges worldwide, including to smallholder farmers and their seed systems. In response, an escalating number of seed projects are being planned to deliver immediate aid or to alter current seed production programs. A *Statement*, prepared by diverse seed system experts, aims to steer both the immediate aid (next 1–2 seasons) and more developmental planning (next 1–3 years). *The Statement* includes 10 short-term and 4 medium-term recommendations, placing emphasis on all seed systems smallholders use: formal, informal, and integrated. It also looks beyond seed *per se* to the direct information and digital systems that shape remote assessments, data sharing and inclusive feedback. *The Statement* is prefaced by an introduction that helps contextualize the recommendations, reviews the history of humanitarian seed aid and summarizes the varied response forms that have unfolded over the last three decades.

1. Introduction

The Statement included below was written by a Thinking Group (TG) of seed system experts. We have variously worked in *the formal seed sector* (allied with public research, and private local and international companies); the *informal seed sector,* centered in smallholder practices, local markets and storage techniques; and the *intermediate seed sector,* especially with community-based seed production groups and seed-banks. As a group, we embrace over 140 years of seed system experience in Asia, Latin America, Europe, and particularly Africa and have been involved in a range of emergency, recovery, development assistance and commercial seed system programs.

We wrote *The Statement* to help guide current seed aid response and also to anticipate seed system development thrusts of the next two to three years. COVID-19 is already having strong immediate impacts and is likely to have lingering effects over multiple seasons. Our aim is shape positive program choices as well as to dampen or halt negative programming. Seed assistance work can bring real gains to smallholders but if poorly conceived or executed, can also result in significant damage to farmers, markets, and broader rural economies, even in a matter of months (see Fig. 1). With the reflections below, we hope to engage government experts, senior level managers and programming professionals who are steering the direction of agricultural and seed systems investments during this period of the COVID-19 pandemic. There are many wise decisions to be made.

What immediately follows are some modest introductory notes to help contextualize *The Statement.* We look briefly at the history of humanitarian seed aid and review the varied response forms it has taken over the last three decades.

1.1. A short history of humanitarian seed aid and its expanding rationale

Compared to food aid, which dates from the early to mid-1950 s (Barrett and Maxwell, 2005; FAO, 2005), seed aid is a relatively new form of international relief. Select instances of seed aid unrolled as early as 1974 when the Ethiopian government gave seed (and oxen) in response to a cataclysmic drought. The Food and Agriculture Organization of the United Nations (FAO) marked one of its first instances of

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https://doi.org/10.1016/j.foodpol.2020.102000
Received 2 September 2020; Received in revised form 6 November 2020; Accepted 7 November 2020
Available online 12 November 2020
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Fig. 1. Example of the results of a seed distribution program in Malawi 2016. Poor seed aid can do serious harm. (Photo credit J.C. Rubyogo/ABC-PABRA).

seed delivery at the turn of the 1980s when it moved rice into Cambodia (Sperling et al., 2008). However, it is only since the early 1990s, and particularly in Africa, that relief agencies have engaged in routine seed aid. Often, seed aid has been a complement to food aid ("if you are giving food, why not just add some seed") (Bramel and Remington, 2004).

In its origins, the logic of seed aid was relatively clear-cut (ODI, 1996). Instead of directly giving food aid ("handouts"), why not help stressed farmers produce food for themselves? For instance, with one kg of sorghum seed, farmers themselves can easily produce 100 kg of food. The economics appeared evident; seed aid was projected to reduce dependency on food aid, and the overarching philosophy, empowering farmers to restore farm production, seemed to herald triple gains (Sperling and McGuire, 2010).

The reality of the effectiveness of seed aid has unrolled somewhat differently (and merits critical analysis which goes well beyond the practical scope of *The Statement*). Emergency seed aid has consistently escalated through the years and to an ever-widening set of countries. For example, the FAO alone had seed plans for 48 countries during the 2008 food security crisis (McGuire and Sperling, 2011). Beyond its growing scale, seed aid has become egregiously repetitive: Ethiopia, 42+ years in a row; Burundi 38 seasons since 1995 (FSN-Network, 2020), with drought areas across southern Africa and eastern Kenya moving toward similar repetitive trends (USAID, 2016). Third, in a notable expansion of rationale, emergency seed aid is being leveraged as a vehicle to compensate for shortcomings of seed system development especially in the area of new variety dissemination. Specific examples include new drought-tolerant varieties that may not be sustainably reaching the drought-affected areas because stressed farmers may not be buying them, so such varieties are given free under the umbrella of emergency or chronic stressed aid (e.g. CIMMYT, 2016). New biofortified varieties may not be bought by those most mal-or under-nourished, so they are being given free – again as assistance– especially linked to health centers and mother and child assistance programs (HarvestPlus, 2020). Hence, the scale, geographic scope, and rationale for seed aid seem to be expanding, and lines among immediate humanitarian, chronic stress and development aid are becoming blurred.

1.2. Humanitarian seed aid in its varied forms

Humanitarian seed aid has currently four major forms, with only the first two in significant practice.

Direct seed distribution [(DSD), otherwise known as emergency seed provision and sometimes called "seed and tools"] is the oldest, most widespread form. Basically, certified seed is procured from outside the agro-ecological region and given free to farmers. As the seed is obtained from formal sources and in bulk, relatively few crops (often only one or two) tend to be distributed in any single distribution (FAO, 2010).

Seed fairs, frequently combined with vouchers (also called *Seed vouchers and fairs* "SVF"), are the second most common approach and date from the early 2000s (Remington et al., 2002). Seed fairs are implemented typically by non-governmental organizations (NGOs) to provide an ad hoc market place where farmers can access seeds of various crops and varieties: that is, farmers themselves choose what is needed for the upcoming season. Depending on donor and national quality regulations, and the stipulated screening processes, vendors may include a mix of informal, integrated and formal seed sources: e.g., other farmers, community-based seed groups, seed companies, and research centers (CRS, 2017).

Cash and voucher assistance- (CVA) is a well-known humanitarian approach (CALP, 2020) but, to date, has rarely been linked to seed security work *per se* (Keanes et al., 2020). Cash or vouchers are provided, either physically or via remote transfer, so as to give the recipient farmers purchasing power. With cash, farmers can buy whatever they want (seed or not seed) and from venues of their choice. In this mode of operation, a farmer might equally buy from an agro-dealer, local market, or both, depending on preference and local availability.

Market-led support to supply side, to date, is virtually untested in seed relief approaches. Punctual seed multiplication might be commissioned in advance of sowing for relief purchases but more full-fledged support for ongoing formal or informal markets has been non-existent (Walsh and Sperling, 2019). In theory, but not yet proven in practice, aid interventions could potentially take place in multiple domains–to catalyze seed availability, access or quality improvements, or to relieve bottlenecks (possible frameworks for action could be found at FSN-Network, 2020; Sperling et al., 2020).

In the absence of COVID-19, and in theory, the choice of a response type, would depend on the seed security problem at hand. A seed system security assessment would be conducted (Sperling, 2008; SeedSystem.org, e-learning course, 2019) and the constraint identified would be addressed in a targeted manner. As a broad example, if access is the key problem, farmers might be given cash or vouchers—or fairs might be organized. If availability proves the constraint, a DSD would be launched. In practice, even without COVID-19, implementers have tended to veer toward approaches with which they are logistically familiar, or which respond to their core institutional philosophies. For example, some NGOs promote rights-based approaches. Otherwise, implementers may simply do what they assess as feasible given short time frames (McGuire and Sperling, 2013).

The overall field of seed aid lingers well behind the analysis of humanitarian food security response (Maxwell et al., 2013; Lentz et al., 2013). This lag is likely for a range of reasons. Instruments of seed response are limited. Seed markets, and especially informal markets, are poorly understood and rarely leveraged. Aid implementers are often fixated on moving certified seed quality only, which can result in limiting crop choice, sources, and assistance modalities. Even the recognition of the importance of seed assistance as a separate category of response (vs. responses linked to WASH, or Protection, or Food Security) is surprisingly recent. In fact, the UN Food Security Cluster only formed an agricultural working group, of which seed is a main component, in November 2019 (UN Food Security Cluster, 2019). As perhaps the ultimate testimony to seed aid's lack of scrutiny, seed as an element of aid is might still be lumped in the category of Non-Food Items (NFI) which makes it difficult to provide technical advice, follow-up and clear evaluations.

In terms of emergency aid, this *Statement* mainly shares guidance on the predominate forms of seed assistance. COVID-19 has complicated further an already restricted field. Formal seed inspection services have been closed or are minimally operating in many locales and whether seed quality can be guaranteed is questioned. Congregating of persons, such as in fairs, has had to be reconsidered or redesigned, including assessments of whether the staggering of fair days and significant physical distancing provides sufficient protection for both buyers and

sellers. For both DSDs and SVFs, there is also the overarching issue of whether during the period of COVID-19 operations can be organized in time for planting, recognizing that many organizations are functioning only with skeletal staff and that even under "normal" conditions, seed assistance often arrives late (United Nations Global Food Security Cluster, 2020).

1.3. Key features of the statement

It is with the broader history of seed emergency assistance and with knowledge of possible development constraints that the guidance presented below was written. The *Statement* is posted in its original content as negotiated by members of the Thinking Group (TG). For a seed security action statement issued in response to a stress period, it has some notable features:

- It recommends support to all seed systems farmers might use: formal, informal and integrated systems.
- Heavy emphasis is placed on proper diagnosis of the problem(s) and learning from the immediate intervention (both actions of which are often treated as optional in real-time practice).
- Linked to the point above, as COVID-19 effects are extending widely through space and time, a separate action point recommends catalyzing regional and/or continent-wide learning mechanisms to assess efficiencies and effectiveness, and to anticipate future trends and adaptations needed in the face of this zoonotic disease (which is likely not the last occurrence or only form of virus).
- The proposed work agenda covers elements of the emergency phase, chronic stress context, and more development needs– all of which need to be considered simultaneously. If relief is to link with and spur development efforts, systems need not only to be built back better but must have capacity to plan forward. In this vein, action points for inclusive digital innovation merit specific attention.
- Lastly, while practically focused on concrete actions, the statement underscores that policy changes will have to be at the forefront of strengthening seed systems. Seed systems need to be better designed to serve all farmers. They need to function better during stress and non-stress periods; to offer diversity; and must reach last mile areas on an ongoing basis. Expanding quality options and opening up sale venues are the first policy areas that require immediate attention.

2. *The Statement*: Seed security response to COVID-19 now and beyond

COVID-19 brings new challenges worldwide, including to smallholder farmers and their seed systems. In response, an escalating number of seed projects are being planned to deliver immediate aid or alter current seed production programs to address upcoming needs. When each crisis feels like the worst ever faced, the fear of missing a window for action could spur inappropriate seed security response. This statement aims to steer the potentially escalating aid towards wiser, better and more informed practice–and to stop unproductive or even harmful decisions.

Big disasters spurring seed aid responses are becoming more and more common. As examples, the Haiti earthquake 2010, the unrest in South Sudan 2011 and the Ebola crises in West Africa (2014) all triggered massive seed responses from which lessons may inform COVID-19 seed assistance. That said, compared to other large-scale disasters, COVID-19 has several distinctive features which require dynamic thinking and practical innovation. The virus is not a one-off stress and will extend over several seasons with trailing, residual effects. COVID-19 may be more geographically widespread than stresses we have known in recent history, with differentiated effects on markets and varied national policy responses. Further, COVID-19 is not the last zoonotic disease and even this current version may re-emerge. How we respond now sets a precedent and will affect the path to recovery and resilience of seed systems for years to come. We have an opportunity for rapid, global learning, with a *strong certainty* that it will serve us even in the near future.

This seed-linked guidance spans the range of seed systems that smallholder farmers normally use: *formal systems* that governments control, local and international seed companies, and relief providers; *informal systems* composed of seed saved from harvests, exchanged or traded in social networks or local markets; and *intermediate* systems such as community-based seed production groups. From these combined systems (that may have variations across countries) farmers access seed of the range of crops they need to be food and nutrition secure, generate income, and support resilient farming systems. Experience shows that pluralistic seed systems tend to be stronger than single solutions.

This statement recommends higher-level seed system actions that are needed during COVID-19 now and beyond to protect and spur the seed security of smallholder farmers. Rather than a how-to-guide, the statement gathers reflections on strategy and identifies needed and not needed critical elements. Seed systems are complex and interventions require a strategy instead of stop-gap measures. Seed takes seasons to produce and its effects last for many seasons to come.

The first set of reflections aims to steer actions now (this year, and next) and focuses on immediate aid. The second set, more developmental, suggests key elements to build back not only better- but to build back so as to look forward (core seed system actions for 2–3 years ahead). COVID-19, which often overlays other stresses (such as drought, locusts), may be a pivotal catalyst for governments and donors to push seed systems towards addressing the needs of rapidly evolving biophysical, economic and social landscapes. COVID-19 has forced us to strategize about system change and perhaps in very positive ways.

2.1. ACTION POINTS NOW: the next 1–2 seasons

i. **Seed should be deemed an essential resource with continued support to agricultural and seed-related programs.**

Seed is a re-producible input that empowers smallholder farmers to provide food and generate income on a continuing basis. Seed is also a good return on investment: 1 kg of sorghum seed can yield 100 kgs of food. As an essential commodity, seed should be given policy support and high-priority attention by governments, donors, and other investors. Seed system investments that truly contribute to seed system health must be ongoing - supporting researchers, farmers, extension, and other actors to ensure that the right seeds are available at the right time. One-time crisis effort does not produce this result. While support to health systems might be an immediate priority in this initial COVID-19 period, seed systems need to be prioritized during the early recovery and sustained development phases.

ii. **Support to existing seed systems and their linked markets should be a first focus –before outside emergency or development assistance is considered.**

ii.a. In terms of the *formal seed system*, this translates especially to attention on:

- Facilitating free movement of seed ("green channels");
- Supporting/extending seed inspection capability;
- Relaxing import regulations;
- Understanding the impact on access to credit/financial institutions and how possible changes may influence the decisions farmers make.

ii.b. In terms of the *informal seed system*, this translates to an emphasis on:

- Helping farmers to save the seed they have through targeted interventions including messaging and technical support on improved storage options technologies;
- Supporting local market actors and including traders to move locally-produced seed among regions, if needed, and hold staggered market-day sales;

- Engaging market actors more generally to identify and mitigate COVID-related hurdles that weaken functionality.

iii. **The recognition that seed aid can do harm needs to frame consideration of any intervention.**

Although seed aid is often viewed as benign, it can increase the vulnerability of smallholder farmers. Provision of late, mal-adapted varieties or poor-quality seed is harmful as it wastes farmers' land and labor and takes space on plots that might have been otherwise productive. Free seed can also undermine both commercial and local markets. Further, if given repeatedly, seed aid creates farmer dependency. The decision to move forward on a seed intervention needs to be made very consciously and not as a default decision (e.g., not the common default of "when in doubt, give seed").

iv. **Seed assistance in any form should proceed only if there is evidence of a seed security problem.**

Seed system security assessments (SSSAs) are not optional but obligatory. Due to COVID-19, existing assessment methods will have to be tailored to operate remotely and to include methods that can cover even larger scales. SSSAs routinely consider 1) whether seed is available, 2) if it is accessible to farmers, and 3) if it is the quality farmers want and need. (We define quality as seed which is adapted, locally preferred and generally free from seed-borne pests and diseases.) SSSAs assess all of the seed systems farmers use in a region in the recognition that different crops and varieties may be tied to different kinds of seed systems. As general examples, hybrid maize seed is mostly traded in formal channels, millet seed is often saved within informal systems and common beans are traded on local markets, also in informal systems. Assessments should address not only staple food crops but crops that contribute important nutrients to the diet and/or farming systems, such as grain legumes or vegetables.

v. **If seed aid is to be implemented, the better options for response will depend on whether the seed security problem is one of availability, access or quality, and also might be influenced directly by local COVID-19 regulation.**

Presence of COVID-19 in a rural area, and safety and social distancing requirements might affect whether market days are held, the extent of farmer and trader participation in local markets, voucher redemption at agro-dealers, and the logistics of any implementation procedure. First, consider aid types that build on existing channels and that can boost rural economies. Seed security response types include: Direct seed distribution (DSD); Seed vouchers and fairs (SVF); Cash or voucher-based assistance (CVA) or market-led support.

vi. **If a Direct Seed Distribution unfolds, these elements should be respected:**

- Seed must be locally-adapted;
- Seed quality needs to be appropriate for germination and viability, free from seed-borne pests and diseases;
- 'Cheap seeds' should be avoided as they can undermine existing seed systems;
- Seeds should reflect the preferences of the farmers who produce the crop, market conditions and consumer preferences. Demand-driven aid should be the standard;
- Farmers should be given a choice of crops and varieties, allowing them to strategize under continually changing circumstances;
- Seed specifications should aim to meet the minimum national standards of the recipient country.

vii. **Any seed assistance should consider the range of crops farmers want and need, including crops that are important for nutrition and farming system resilience.**

Seed assistance has too long focused on single crops. Policy attention should be given to crops with key nutrients (grain legumes, vegetables) to strengthen the health of women of reproductive age and their children, and to the array of crops that confer greater resilience to the particular farming stresses such as drought and low soil fertility.

viii. **In addition to a choice of crops, flexibility and choice must be built into seed assistance design to enable farmers to respond to fluctuating circumstances.**

The effects of COVID-19 on farming systems are still being charted as the pandemic unfolds. We observe different consequences even over short distances and short periods of time. Movements of inputs and products are sometimes variable even over a modest 10 km radius, with markets functioning in one village but not another nearby. Farmers need seed system assistance that they themselves can tailor to their immediate, and often dynamic production and marketing goals. In addition to a choice of crops, elements of flexibility might be incorporated through choices in the type of aid (cash, in-kind, voucher), multiple venues for seed acquisition, and quality options that may differ by crop. Since effective, quick decisions by farmers will depend on information, information will be as important as the seed-related products themselves.

ix. **Two-way communication systems, feedback and feedforward, need to be developed at a new level of intensity and scale: quickly!**

Given the potential impact of social distancing, novel ways of sharing information- mostly more remote, and at scale- need to catalyzed or strengthened, especially for these first growing seasons (when the restrictions due to COVID may be at their most intense). Capacity to feed information back is as critical as capacity to feed it forward. Approaches which leverage mobile phones, radio and digital platforms (e.g., USSD, WhatsApp) might be given first priority. *Feedback* is information from actual users on aid performance in real time, including concerns such as inappropriate seed and suggestions for aid process improvement. *Feedforward* refers to information on availability of seed, by crop/variety, price, and exact market locations or possible acquisition. All two-way digital communication systems will demand considerable coordination among key players: policy makers, donors, implementers and field staff on the ground.

x. **An evaluation component is obligatory for any seed assistance program.**

COVID-19 superimposes new seed assistance challenges on old ones. Real-time and post-season assessments allow immediate improvements to design and implementation and facilitate the identification of seed-linked lessons. Many evaluation exercises must now be remote and the scale of possible assistance might be at higher and wider levels than experienced previously. Developing common evaluation standards for COVID-19 seed might help accelerate the learning process.

2.2. ACTION POINTS LOOKING FORWARD: the next 2–3 years

COVID-19 and its effects are here to stay in some form for the foreseeable future. Current actions should anticipate the novel and needed ways of working. Find below recommendations to steer current funding toward key future actions of the next 2–3 years (3–6 seasons).

i. **Digital remote capacity to interact with farmers and other seed system actors needs to be taken to a higher level of sophistication and scale.**

COVID-19 has accelerated digitalization across the globe, often functioning to minimize physical contact and contagion. This is a good reason to support digitalization in seed systems as well, not only because of lingering constraints on movement and congregations in markets but also to seize on important and long-lasting opportunities. Key from the outset is that digital forms of outreach be inclusive ("digitally inclusive"). This means they need to be designed taking into account socio-economic, gender, cultural and age specificity. This should result in digital services that are, as much as possible, available, usable, affordable to all smallholders. Also, digital forms need to extend services to support pluralistic seed systems. In formal seed systems, demand-oriented delivery of seeds often already takes advantage of some digital tools such as mobile phones, logistics software, cashless payment, or electronic vouchers. Digital systems need to be strengthened, expanded

and also support informal and intermediate seed systems.

Among possible first-order activities:

- Develop digital platforms to coordinate all seed-related intervention in a country or affected area by facilitating the open exchange of real-time data;
- Develop inclusive, voice-based mobile-based services that allow farmers and others to order, make payments, and collect seed using their own (basic) phones and assuming low levels of literacy;
- Develop digitally-supported delivery channels that reach rural areas through community organizations, local markets and corner stores;
- Create platforms for aggregating demands for seed among implementers as well as farmers across seed systems, specifying quantity, crop, variety and other information, including demand for local varieties.

ii. **Seed quality options should be diversified and quality verification decentralized.**

To expand access to the range of crops and varieties farmers want and need, seed quality options might be diversified not just during emergency but in normal periods: for many smallholder farmers, "normal" means stressed (whether COVID or drought or something else). Certified seed only (or even Quality Declared Seed- QDS) is not a realistic cost-benefit standard that can applied to the needed diverse set of crops. Truthfully-labelled, standard seed, and farmer-guaranteed seed categories are options that might be considered, accompanied by special guards against rogue seed providers. Legislative as well as practical (experiential) modifications might be needed. Pilots exist in different parts of the world and recent legal reviews (FAO) suggest that transitions may be possible.

iii. **Seed sale venues should be expanded, with outlet placement decentralized and located much closer to or within communities.**

To expand access to the range of crops and varieties farmers want and need during the time of COVID-19 and beyond, seed sale venues actively need to better reach "last mile areas". Formal system strategies such as use of mobile vans or satellite agents on motorcycles or bicycles can only go so far in terms of who is served and where. Extending seed sales of both formal and informal systems to the places where farmers routinely buy can greatly expand seed access. Corner stores that sell items like sugar and oil and local markets could be leveraged as specialized seed venues.

iv. **A national, regional or continent-wide learning component should be integrated into the early phases of COVID-19 crisis and response.**

The global vantage point offered by COVID-10 offers learning opportunities to guide the development of more resilient seed assistance strategies, now and beyond. The research/learning agenda might include identification of:

- Points of system stress or failure (customs, shipping, market infrastructure) that demand short and longer-term investments to overcome;
- Adaptations by farmers, traders or extension agents that successfully overcame immediate barriers and introduced flexibility to operate in fluctuating circumstances;
- Examples of scaling or replication;
- Innovative partnerships that smoothed COVID-related disruption and that could serve even beyond COVID, if strengthened or formalized.

3. Concluding comment

In terms of seed assistance, whether emergency or development, the time of supply-side assistance, one crop, no choice and with only slim evidence of a seed security problem, needs to stop. Farmers' demands have to drive seed system support, including allowing farmers to strategize and adjust in the face of quickly changing contexts and markets. COVID-19 has introduced novel and wide-ranging constraints that may linger over years. COVID may also be an unexpected catalyst towards moving seed systems forward, opening up information and feedback channels, expanding crop and quality options, and providing an accelerated learning opportunity to design more resilient and dynamic systems. This statement has identified some better practices for current action as well as clear areas where future investments in pluralistic seed systems might be best made in the next 2–3 years. We need to act wisely now (*halt stop-gap aid*) and use this crisis in history to build back much better.

Acknowledgments

Dr. Julie March gave valuable comments on several earlier versions of this Viewpoint. We also thank the editor and three reviewers for their detailed and thoughtful feedback.

Disclaimer

Views expressed are those of the authors as individuals and do not necessarily represent the viewpoints of the institutions where they are currently employed or have been formerly employed.

Funding

This work did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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